computers & structures

An International Journal

List of Contents and Author Index

Volume 43, 1992

PERGAMON PRESS

OXFORD · NEW YORK · SEOUL · TOKYO

computers & structures

An International Journal

editor-in-chief

Prof. H. Liebowitz c/o A.E.R.D.C.O.
P.O. Box 25736
Washington, DC 20007-8736, U.S.A.

editorial advisory board

Prof. E. R. Arantes e Oliveira
Lisbon, Portugal

Prof. H. Ashley
Calif., U.S.A.

Prof. S. N. Atluri
Ga, U.S.A.

Dr M. L. Baron
N.Y., U.S.A.

Prof. K. J. Bathe
Mass., U.S.A.

Prof. B. A. Boley
N.Y., U.S.A.

Prof. L. Broglio
Rome, Italy

Dr T. A. Cruse
Tenn., U.S.A.

Prof. S. J. Fenves
Pa, U.S.A.

Dr R. E. Fulton
Va, U.S.A

Dr D. S. Griffin
Pa, U.S.A.

Dr M. C. Junger
Mass., U.S.A.

Dr Z. Knesl
Czechoslovakia

Prof. R. D. Logcher
Mass., U.S.A.

Dr R. H. MacNeal
Calif., U.S.A.

Prof. P. V. Marcal
Calif., U.S.A.

Prof. Ch. Massonnet
Liège, Belgium

Dr R. J. Melosh
N.C., U.S.A.

Prof. T. Moan
Trondheim, Norway

Prof. F. Niordson
Lyngby, Denmark

Prof. A. K. Noor
Va, U.S.A.

Prof. J. T. Oden
Tx., U.S.A.

Prof. K. A. V. Pandalai
Madras, India

Prof. T. H. H. Pian
Mass., U.S.A.

Dr G. G. Pope
Hants, U.K.

Prof. E. P. Popov
Calif., U.S.A.

Dr J. P. Raney
Va, U.S.A.

Prof. J. N. Reddy
Va, U.S.A.

Dr E. M. Q. Røren
Oslo, Norway

Prof. L. A. Schmit, Jr
Calif., U.S.A.

Prof. E. Sevin
D.C., U.S.A.

Dean A. Sherbourne
Ontario, Canada

Mr I. C. Taig
Preston, U.K.

Prof. B. H. V. Topping
Edinburgh, U.K.

Prof. T. G. Toridis
D.C., U.S.A.

Prof. F. Venancio-Filho
Rio de Janeiro, Brazil

Prof. Y. Yamada
Tokyo, Japan

Prof. O. C. Zienkiewicz
Swansea, U.K.

Publishing, Subscription, and Advertising Offices: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A., or Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, U.K.

Published two issues/month (four volumes 1992)

Annual subscription rates (1992)
Annual Institutional Subscription Rate (1992): £1255.00 (US$2280.00). Two-year Institutional Rate (1992/93): £2384.50 (US$4332.00). Sterling prices are definitive. US dollar prices are quoted for convenience only, and are subject to exchange rate fluctuation. Prices include postage and insurance and are subject to change without notice. Subscription rates for Japan include despatch by air and prices are available on request. Personal subscription rate for those whose library subscribes at the regular rate is available from any Pergamon Press office.

Application to mail at second class postage rate is pending at Rahway, NJ. Postmaster send address corrections to Computers & Structures, c/o Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

Copyright © 1992 Pergamon Press Ltd

Cover design by Mr J. Koukos

LIST OF CONTENTS

NUMBER 1

T. Pagnoni, J. Slater, R. Ameur-Moussa and **O. Buyukozturk**	1	A nonlinear three-dimensional analysis of reinforced concrete based on a bounding surface model
M. D. Adley and **M. H. Sadd**	13	Continuum models for materials with lattice-like microstructure
F. París, A. Foces and **J. A. Garrido**	19	Application of boundary element method to solve three-dimensional elastic contact problems without friction
I. Senjanović and **Y. Fan**	31	A higher-order theory of thin-walled girders with application to ship structures
T. W. Lim and **W. D. Pilkey**	53	A solution to the inverse dynamics problem for lightly damped flexible structures using a model approach
F. J. M. Starmans, W. A. M. Brekelmans and **J. D. Janssen**	61	A hybrid experimental–numerical method for linear structural mechanics
B. P. Wang, D. Babu, R. V. Nambiar and **K. L. Lawrence**	69	Shape design sensitivity analysis using closed-form stiffness matrix for hierarchic triangular elements
D. Givoli	77	A numerical solution procedure for exterior wave problems
J. K. Kodikara and **I. D. Moore**	85	Nonlinear interaction of solids with rigid surfaces
M. N. Viladkar, P. N. Godbole and **J. Noorzaei**	93	Space frame–raft–soil interaction including effect of slab stiffness
T. E. Tay	107	Finite element analysis of thermoelastic coupling in composites
I. E. Harik and **Ya-nan Fang**	113	Seminumerical solution to bending of sector plates and curved slabs of variable stiffness
H. Vaziri	125	Elasto-plastic analysis of hollow spheres under uniform pressures
J. R. Hwang and **Lien-Wen Chen**	129	Vibrations of thick composite circular plates
T. C. Ramesh and **N. Ganesan**	137	A finite element based on a discrete layer theory for the free vibration analysis of cylindrical shells
D. P. Thambiratnam and **V. Thevendran**	145	Axisymmetric free vibration analysis of cylindrical shell structures using BEF analogy

S. A. Alghamdi	151	A computer algorithm for the static analysis of circular helicoidal bars
K.-C. Fu and **D. Ren**	159	Optimization of axially loaded non-prismatic column
J. Jirousek and **M. N'Diaye**	163	Hybrid–Trefftz *p*-method elements for analysis of flat slabs with drops
		Technical Notes
N. I. Ioakimidis	181	Minimax approximation to stress intensity factors with MATHEMATICA
H. Matsuda, C. Morita and **T. Sakiyama**	185	An approximate method for analyzing tapered Mindlin plates
M. A. M. Torkamani and **O. Y. H. Elsafi**	193	Discrete methods of solution for dynamic linear and nonlinear problems
		Announcement
	203	Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design
	I	Software Survey Section

NUMBER 2

C. Jebaraj, A. S. J. Swamidas, L. Y. Shih and **K. Munaswamy**	205	Finite element analysis of ship/ice interaction
P. K. Mishra, S. Das and **S. S. Dey**	223	Discrete energy method for the analysis of right box-girder bridges
K. N. Shivakumar, C. A. Bigelow and **J. C. Newman, Jr**	237	Parallel computation in a three-dimensional elastic–plastic finite-element analysis
V. Thevendran and **N. E. Shanmugam**	247	Lateral buckling of narrow rectangular beams containing openings
Chih-Chao Chang	255	Consistent stiffness iteration method for elastic–plastic analysis
F. W. Williams and **Ye Jianqiao**	265	Optimum mass design of laminated plates with longitudinal mid-surface voids
K. S. Srivatsa and **A. V. Krishna Murty**	273	Stability of laminated composite plates with cut-outs
S. Ahmad and **T. K. Datta**	281	Nonlinear response analysis of marine risers

N. Ganesan and **R. C. Engels**	297	Hierarchical Bernoulli–Euler beam finite elements
Der-Ming Ku and **Lien-Wen Chen**	305	Dynamic stability of a shaft–disk system with flaws
M. N. Viladkar, R. P. Sharma and **G. Ranjan**	313	Visco-elastic finite element formulation for isolated foundations on clays
M. H. Omurtag and **A. Y. Aköz**	325	The mixed finite element solution of helical beams with variable cross-section under arbitrary loading
A. E. Anuta, Jr	333	The modal equations applied to continuous systems
L. Piancastelli	337	Some considerations on a four-node finite element for composites with the drilling degrees of freedom
T. K. Paul and **K. M. Rao**	343	Stress analysis of a thick fibre-reinforced plastic laminated square plate containing two elliptical holes under transverse uniform loading
K. M. Rao and **Y. U. Maheswara Rao**	351	Computer program for the stiffness matrix of laminated plates using the hybrid-stress finite element
G. D. Stefanou	365	Dynamic response of tension cable structures due to wind loads
C. C. Spyrakos	373	Seismic behavior of bridge piers including soil–structure interaction
Jiang Qian and **Xiu-xi Wang**	385	Three-dimensional stochastic response of offshore towers to random sea waves
B. Tokarsky	391	Fully automatic finite element solution of static problems
		Announcement
	395	Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design
	I	Software Survey Section

NUMBER 3

Chongbin Zhao, S. Valliappan and **Y. C. Wang**	397	Mechanism of solid–water interaction problems during earthquakes
N. Siva Prasad, K. P. Vinod Kumar and **S. Badrinarayanan**	411	Computer aided development of surfaces of transition pieces

J. E. Pulido, T. L. Jacobs and **E. C. Prates de Lima**	419	Structural reliability using Monte-Carlo simulation with variance reduction techniques on elastic–plastic structures
H. P. Lee and **S. P. Lim**	431	Free vibration of isotropic and orthotropic square plates with square cutouts subjected to in-plane forces
B. Singh and **S. Chakraverty**	439	On the use of orthogonal polynomials in the Rayleigh–Ritz method for the study of transverse vibration of elliptic plates
D. G. Fertis and **A. Afonta**	445	Free vibration of variable stiffness flexible bars
H. P. Huttelmaier	451	Instability analysis using component modes
D. K. Singha Roy, J. N. Bandyopadhyay and **D. P. Ray**	459	Comparative analysis of deep beams
A. Dey, J. N. Bandyopadhyay and **P. K. Sinha**	469	Finite element analysis of laminated composite conoidal shell structures
K. S. Surana and **N. J. Orth**	477	Three-dimensional curved shell element based on completely hierarchical p-approximation for heat conduction in laminated composites
V. Thevendran, N. C. Das Gupta and **G. H. Tan**	495	Minimum weight design of multi-bay multi-storey steel frames
V. N. Kaliakin	505	A simple coordinate determination scheme for two-dimensional mesh generation
S.-P. Scholz	517	Elements of an object-oriented FEM++ program in C++
Xie Jian-Fan and **Wu Yong-Li**	531	A new type of boundary integral equation for plane problems of elasticity including rotational forces
J. Fish	539	The s-version of the finite element method
Y. L. Hwang and **A. A. Shabana**	549	Dynamics of flexible multibody space cranes using recursive projection methods
K. S. Anderson	565	An order n formulation for the motion simulation of general multi-rigid-body constrained systems
R. A. Brockman, J. H. Champion and **J. P. Medzorian**	581	Finite element analysis of tire critical speeds

A. Gupta, H. E. Delgado, J. H. Kane and **K. G. Prasad**	595	Elasto-plastic boundary element analysis utilizing a zone condensation technique
		Technical Note
P. W. Khong	605	Lower bound approach to the post-buckling solutions of thin-walled structures
		Announcement
	611	Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design
	I	Software Survey Section

NUMBER 4

V. K. Koumousis and **G. Ag. Peppas**	613	Stiffness matrices for simple analogous frames for shear wall analysis
H. P. Lee	635	Buckling of annular plates with stepped variation in thickness
D. K. Choi and **S. Nomura**	645	Application of symbolic computation to two-dimensional elasticity
G. S. Palani, N. R. Iyer and **T. V. S. R. Appa Rao**	651	An efficient finite element model for static and vibration analysis of eccentrically stiffened plates/shells
D. Talaslidis and **I. Sous**	663	A discrete Kirchhoff triangular element for the analysis of thin stiffened shells
F. Tin-Loi	675	Optimal plastic design of arches
Su-huan Chen, Zhong-sheng Liu and **Zong-fen Zhang**	681	Random vibration analysis for large-scale structures with random parameters
B. Chouchaoui and **A. Shirazi-Adl**	687	A mixed finite element formulation for the stress analysis of composite structures
R. Butler and **F. W. Williams**	699	Optimum design using VICONOPT, a buckling and strength constraint program for prismatic assemblies of anisotropic plates
W. Tang and **Y. W. Shi**	709	An investigation of the plastic rotational factor during loading processes for three-point bending specimens
S. C. Patodi and **S. P. Jethmalani**	713	A method and a post-processor for predicting post-buckling response of arches
K. Chandrashekhara and **K. M. Bangera**	719	Free vibration of composite beams using a refined shear flexible beam element

Tian-quan Yun and **Cheng Su** 729 Analysis of a shaft embedded in granular half space by the line-loaded integral equation method

A. R. Chandrasekaran, D. K. Paul and **B. L. Agarwal** 737 Complex eigenproblem for flutter analysis of structures

R. Levy and **A. Hanaor** 741 Optimal design of prestressed trusses

A. K. Das and **S. S. Dey** 745 Effects of tuned mass dampers on random response of bridges

J.-C. Luo 751 A formulation of the finite element method by domain decomposition

M. Arghir, A. Ripianu and **M. Noori** 761 Nonlinear dynamic analysis of vibro-milling in mills with spatial motion—I. Formulation of nonlinear equations of motion

H. R. H. Kabir 769 A double Fourier series approach to the solution of a moderately thick simply supported plate with antisymmetric angle-ply laminations

Technical Notes

K. H. Low and **C. K. Ng** 775 An analysis program for vibration modes of a link carrying solid mass

F. J. M. Q. de Melo and **P. M. S. T. de Castro** 787 A reduced integration Mindlin beam element for linear elastic stress analysis of curved pipes under generalized in-plane loading

P. K. Gotsis, A. H. Shabaik and **G. H. Sines** 795 Elasto-plastic analysis of an aluminum alloy matrix reinforced with silicon carbide fibers

N. I. Ioakimidis 803 Application of MATHEMATICA to the direct solution of torsion problems by the energy method

Fan Zhiliang and **Song Qigen** 809 Occurrence of non-communicable spurious modes in an eight-node 'serendipity' element

Announcement

813 Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design

I Software Survey Section

NUMBER 5

J. P. Dwivedi, P. C. Upadhyay and **N. K. Das Talukder** 815 Springback analysis of torsion of L-sectioned bars of work-hardening materials

A. K. Noor and **C. M. Andersen**	823	Hybrid analytical technique for the nonlinear analysis of curved beams
Sun Liangxin and **Shi Zhiyu**	831	The analysis of laminated composite plates based on the simple higher-order theory
M. F. Yang, C. C. Liang and **C. H. Chen**	839	A rational shape design of externally pressurized torispherical dome ends under buckling constraints
Y. J. Kang, S. C. Lee and **C. H. Yoo**	853	On the dispute concerning the validity of the Wagner hypothesis
C. S. Tsai	863	Analyses of three-dimensional dam–reservoir interactions based on BEM with particular integrals and semi-analytical solution
D. P. Thambiratnam and **V. Thevendran**	873	Simplified analysis of asymmetric buildings subjected to lateral loads
H. C. Chen	881	Evaluation of Allman triangular membrane element used in general shell analyses
S. T. Tan and **C. K. Lee**	889	Inversed rational *B*-spline for interpolation
Dongzhou Huang and **Ton-Lo Wang**	897	Impact analysis of cable-stayed bridges
J. Bortman and **B. A. Szabó**	909	Nonlinear models for fastened structural connections
F. Lebon and **M. Raous**	925	Multibody contact problem including friction in structure assembly
E. A. Orady	935	An automatic steplength control algorithm for stiff ODEs systems
G. D. Hahn and **K. R. Sathiavageeswaran**	941	Effects of added-damper distribution on the seismic response of buildings
S. C. Misra, **S. C. Samanta** and **A. K. Chakrabarti**	951	Transient magnetothermoelastic waves in a visco-elastic half-space produced by ramp-type heating of its surface
E. A. Sadek	959	Optimization of structures having general cross-sectional relationships using an optimality criterion method
P. K. Datta and **M. K. Lal**	971	Static stability of a tapered beam with localized damage subjected to an intermediate concentrated load
		Compendium
A. Der Kiureghian and **C.-D. Wung**	975	A computer-assisted learning system for random vibrations

Technical Notes

S. Chockalingam, T. C. Mathew, G. Singh and G. V. Rao 995 Critical temperatures of hybrid laminates using finite elements

N. Nakahira, K. Ozawa and T. Mizusawa 999 Vibration of beams with varying cross-sections by the Stodola–Newmark method

Announcements

1005 Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design

1006 ICOSSAR '93

I Software Survey Section

NUMBER 6

T. Zacharia Verghese and C. S. Krishnamoorthy 1007 A study of finite element and mathematical programming models for inelastic analysis of concrete framed structures

F. Zhang and D. Redekop 1019 Surface loading of a thin-walled toroidal shell

T. Krauthammer and R. D. Puglisi 1029 Simplified analysis of buried reinforced concrete arches under simulated nuclear loads

G. Visweswara Rao 1041 Linear dynamics and active control of an elastically supported travelling string

Dongyao Tan, Qingshan Yang and Chen Zhao 1051 Discrete analysis method for random vibration of structures subjected to spatially correlated filtered white noises

I. Younes and S. Syngellakis 1057 Transfer matrix analysis of asymmetric frame–shear wall systems

S. Tavares and P. Hajela 1067 Thermal/structural dynamic analysis via approximate analytical approach

E. S. Melerski 1075 Probabilistic computer analysis of circular rafts by the method of realizations

H. P. Lee 1085 Fundamental frequencies of annular plates with internal cracks

K. S. Sivakumaran, Min-Shay Lin and Pisidhi Karasudhi 1091 Seismic analysis of asymmetric building–foundation systems

K. S. Sai Ram and P. K. Sinha 1105 Hygrothermal bending of laminated composite plates with a cutout

P. Fuschi, D. Perić and **D. R. J. Owen**	1117	Studies on generalized midpoint integration in rate-independent plasticity with reference to plane stress J_2-flow theory
T. S. Sankar, S. Anantha Ramu and **R. Ganesan**	1135	Variability of SIF and COD of stochastic structural systems
S. P. Sun and **S. M. Rao**	1147	Application of the method of moments to acoustic scattering from fluid-filled cylinders using three different formulations
V. A. Permyakov and **A. M. Remennikov**	1155	General purpose code for steel structures optimal design
K. Guru Prasad and **J. H. Kane**	1165	Boundary formulations for sensitivities of three-dimensional stress invariants
		Technical Notes
A. Y. Kavasoglu and **T.-L. Wang**	1175	Modified moment distribution method for reinforced concrete equivalent frames
A. Y. T. Leung and **Y. F. Liu**	1183	A generalized complex symmetric eigensolver
V. Paramasivam, S. P. Thulasi Ramachandre Gowda and **D. Muthiah Raj**	1187	Timoshenko beam finite element with four DOF and convergence of $O(h^4)$
R. R. Reddy, A. Gupta and **R. P. Singh**	1191	Heuristic, symbolic logic and knowledge-based approach to the design and construction of buildings
P. K. Datta and **M. K. Lal**	1199	Parametric instability of a non-prismatic bar with localized damage subjected to an intermediate periodic axial load
		Announcement
	1203	Second Symposium on Parallel Computational Methods for Large-Scale Structural Analysis and Design
	I	Software Survey Section
	i	List of Contents and Author Index for Volume 43, 1992